	Application No.	Applicant(s)
Notice of Allowability	10/634,148	PROCTOR, JAMES A.
	Examiner	Art Unit
	Edan Orgad	2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *terminal disclaimer filed 9/30/05*.

2. ☒ The allowed claim(s) is/are *1-40*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

        Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☐ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

Response to Arguments

Applicant submission of a Terminal Disclaimer with respect to the Double Patenting

rejection in view of parent case (US Patent # 6,614,776) has been fully considered. Rejection has

been withdrawn.

Allowable Subject Matter

Claims 1-40 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claims 1, the closest prior art of record, specifically Secord, *et al., (WO*

98/43373), Jou, *et al., (WO* 99/14878) and Yano, *et al., (U.S. Patent 5,559,790)* fail to specifically

disclose or provide motivation to teach a physical layer processor comprising: a source signal

including data; an FEC (Forward Error Correction) coder to receive the source signal and

produce an enhanced source signal including data coded with error correction information; a

demultiplexer coupled to receive the enhanced source signal from the FEC coder; a plurality of

modem processors, each of which is coupled to a unique output of the demultiplexer to process

respective portions of the enhanced source signal in independent channels; a summer coupled to

receive outputs of the modem processors to produce an aggregate signal, the aggregate signal

being a summation of the enhanced signal processed in independent channels; and a transmitter

to transmit the aggregate signal over a carrier frequency.

Specifically, the limitation of producing an aggregate signal by summing (via an

adder) portions of a coded source signal that are demultiplexed and processed in separate

independent channels. Secord discloses a system in which error coded data information is

multiplexed for processing and transmitted on different carrier frequencies using separate

transmitters. Fig. 1 illustrates that each independent channel is modulated onto carrier frequency

f1, f2 or f3. There is no combining of information processed in independent channels to produce

an aggregate signal that is transmitted as in the claimed invention. Consequently, Secord does

not teach or suggest producing an aggregate signal by summing portions of an encoded data

signal that are demultiplexed and processed in independent channels. This aspect of the claimed

invention is advantageous because fewer transmitters such as a single transmitter can be used to

transmit the coded signal over a wireless link. Similarly, Jou discloses processing on multiple

channels in which information is transmitted on multiple separate carrier frequencies.

Furthermore, Yano discloses use of an adder to combine signals from multiple modem devices,

however, Yano does not teach or suggest producing an aggregate signal by summing portions of

an encoded data signal that are demultiplexed and processed in independent channels.

Specifically, in Yano at col. 4, lines 9-11 reads "Transmission data 101 inputted to the modem

105-i is inputted to an encoder 201 and subjected therein to encoding process for error

correction." Based on this passage, any encoding is done in each of multiple modem devices.

Therefore, encoding logic in Yano would need to be duplicated for each modem. Notably, Yano

does not discuss a use of error coding because it is directed to a method of controlling power

output levels.

Therefore, the prior art of record fails to specifically disclose or provide the motivation to

teach a physical layer processor comprising: a source signal including data; an FEC (Forward

Error Correction) coder to receive the source signal and produce an enhanced source signal

including data coded with error correction information; <u>a demultiplexer coupled to receive the</u>

<u>enhanced source signal from the FEC coder; a plurality of modem processors, each of which is</u>

<u>coupled to a unique output of the demultiplexer to process respective portions of the enhanced</u>

<u>source signal in independent channels; a summer coupled to receive outputs of the modem</u>

<u>processors to produce an aggregate signal, the aggregate signal being a summation of the</u>

<u>enhanced signal processed in independent channels; and a transmitter to transmit the aggregate</u>

<u>signal over a carrier frequency</u>.

Regarding claim 11, the closest prior art of record (see above) fails to specifically

disclose or provide motivation to teach a physical layer processor comprising: <u>a receiver that</u>

<u>receives a wireless signal from a transmitter, the wireless signal being formed at the transmitter</u>

<u>by a summation of portions of a coded signal that were processed in independent channels but</u>

<u>were wirelessly transmitted as a single aggregate signal</u>; a plurality of demodulators coupled to

receive an output of the receiver; and a multiplexer coupled to direct an output of the

demodulators to an FEC (Forward Error Correction) decoder to recover a single unitary

information signal.

Specifically, the limitation "<u>receiving a wireless signal from a transmitter, the wireless</u>

<u>signal being formed at the transmitter by a summation of portions of a coded signal that were</u>

<u>processed in independent channels but were wirelessly transmitted as a single aggregate signal</u>",

is distinguished over the cited references because the aggregated signal of error correction coded

information processed in separate channels is combined before it is transmitted out over the

wireless channel to the receiver, particularity, resulting in the signal being processed at the

receiver.

Regarding claim 27, the closest prior art of record (see above) fails to specifically

disclose or provide motivation to teach a physical layer signal processor for use in transmitting a

wireless signal, the signal processor comprising: a Forward Error Correction (FEC) encoder,

connected to receive a source signal, and to apply an error correction code; a demultiplexer in

communication with the FEC encoder, the demultiplexer outputting two or more demultiplexed

encoded signals; a plurality of modem processors, each receiving a respective one of the plurality

of the demultiplexed encoded signals, the modem processors each modulating a respective one of

the demultiplexer outputs applied thereto to produce a respective one of a plurality of

transmission code modulated signals, the signal processor further characterized by: a summer

that is connected to receive the plurality of transmission code modulated signals to thereby

produce an aggregate signal; and a transmitter connected to receive the aggregate signal output

by the adder, for producing an aggregate transmitted signal.

Specifically, the limitation "the signal processor further characterized by: a summer that

is connected to receive the plurality of transmission code modulated signals to thereby produce

an aggregate signal; and a transmitter connected to receive the aggregate signal output by the

adder, for producing an aggregate transmitted signal", is distinguished over the cited references

because for example, in Jou, the demultiplexed encoded signals output by the demultiplexer are

provided to a plurality of modem processors. The modem processors each provide for

transmission coding, i.e., code division multiplexed modulating, a respective one of the

demultiplexer outputs. However, applicants invention is additionally characterized by the use of

the adder which is employed to sum each of the plurality of transmission code modulated signals

prior to further radio transmission. In particular, the adder produces an aggregate signal. It is this

aggregate signal that is then applied to the radio transmission equipment, i.e., carrier modulation

and up-conversion. No such aggregate signal and encoding as in the claimed invention is taught

by any of the cited references.

Regarding claims 19 & 35, recite similar limitations as discussed above and allowed for

the same reasons.

Any comments considered necessary by applicant must be submitted no later than the

payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for

Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

US 6,973,601 discloses a system and method for automatic optimization of optical

communication systems.

US 6,940,840 discloses an apparatus for adaptive reverse power control for spread-

spectrum communications.

US 6885652 discloses a Code division multiple access communication system.

US 6,104,708 discloses a wireless data communications system.

US 5,917,852 discloses a data scrambling system and method and communications system incorporating same.

US 5,602,834 discloses a linear coverage area antenna system for a CDMA communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edan Orgad whose telephone number is 571-272-7884. The examiner can normally be reached on 8:00AM to 5:30PM with every other Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PATENT EXAMINER/TELECOMM.